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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,814	11/26/2003	Cha Deok Dong	29936/39765	9355

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EXAMINER

DEO, DUY VU NGUYEN

ART UNIT

PAPER NUMBER

1765

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/722,814

Applicant(s)

DONG ET AL.

Examiner

DuyVu n. Deo

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1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Change et al. (US 6,380,029) and Dong et al. (US 2002/0068398).

At this time, the term “sequentially” will be interpreted as one after the other, but not necessarily to be in any order. Therefore, the polysilicon and metal silicide can be in any order.

Chang describes a method for forming a gate electrode comprising: forming a WSi 50 under a polysilicon 52 (claimed polysilicon film) on a substrate (col. 7, line 56-60; col. 8, line 21-22) (this would read on claimed sequentially); performing an RTA on the WSi at 900 degrees Celsius for about 20 s in a nitrogen atmosphere (col. 7, line 65-col. 8, line 2) (this would crystallize the WSi); forming a gate electrode by etching the WSi and the polysilicon using the same etching gas of Cl₂/O₂ to form a gate electrode (col. 8, line 53-55). Unlike claimed invention, Chang is silent about the physical characteristic of the WSi, which is its stoichiometric ratio of (SiH₂ or SiH₂Cl₂):WF₆ of 2.0 to 2.8. Dong teaches a method for forming WSi wherein he teaches forming the WSi at a stoichiometric ratio of (SiH₂ or SiH₂Cl₂):WF₆ of 2.3 to 2.8 (paragraph [0019]). At the time of the invention, one skilled in the art would find it obvious to form the WSi in further review of Dong’s method because Dong teaches another necessary

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characteristic of the WSi that would facilitate the depositing of the WSi with a reasonable expectation of success.

Referring to claim 8, the RTA would results in the etch rate of the crystallized WSi being similar to that of the polysilicon film because the same process and processing parameters are being performed on the WSi.

3. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang and Dong as applied to claim 1 above, and further in view of Xu et al. (US 6,544,896).

Referring to claims 6 and 7, even though Chang doesn't describe the etching process is performed in an inductively couple plasma chamber. However, using any plasma chamber that is known to one skilled in the art, such as an inductively couple plasma chamber as shown here by Xu (col. 1, line 30-35; col. 4, line 20-37), at the time of the invention would be obvious in order to provide plasma for the etching of the WSi and polysilicon with a reasonable expectation of success.

Response to Arguments

4. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the polysilicon 52 is formed as a control gate) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The polysilicon 52 described by Chang is a part of the gate electrode; therefore, it would read on

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claimed polysilicon film and etching the WSi and polysilicon film to form a gate electrode comprising WSi and the polysilicon film.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DuyVu n. Deo whose telephone number is 571-272-1462. The examiner can normally be reached on 6 am -2:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Primary Examiner

Duy-Vu N Deo

5/15/06

